United States Department of Agriculture

Natural Resources Conservation Service

Lakewood, Colorado

RWA 130100010

April 2008

Rio Grande Headwaters Watershed

Hydrologic Unit Code 13010001

Rapid Assessment

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Introduction

Background Information

The Natural Resources Conservation Service (NRCS) is encouraging the development of rapid watershed assessments in order to increase the speed and efficiency generating information to guide conservation implementation, as well as the speed and efficiency of putting it into the hands of local decision makers.

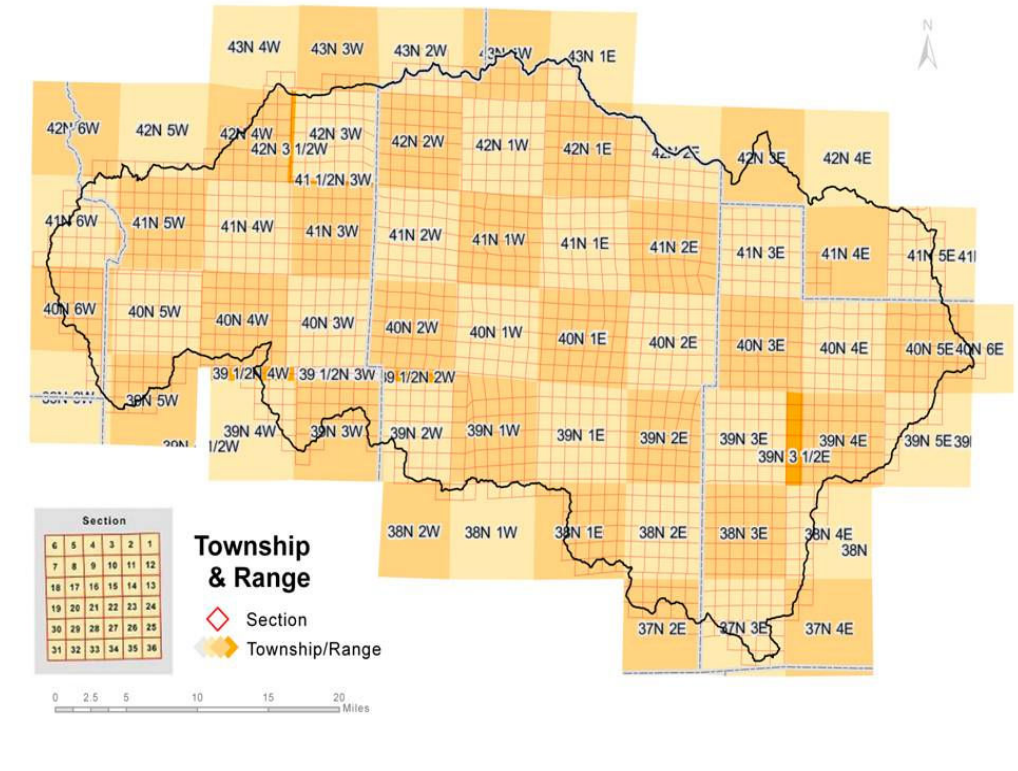
Rapid watershed assessments provide initial estimates of where conservation investments would best address the concerns of landowners, conservation districts, and other community organizations and stakeholders. These assessments help land-owners and local leaders set priorities and determine the best actions to achieve their goals.

Benefits of these Activities

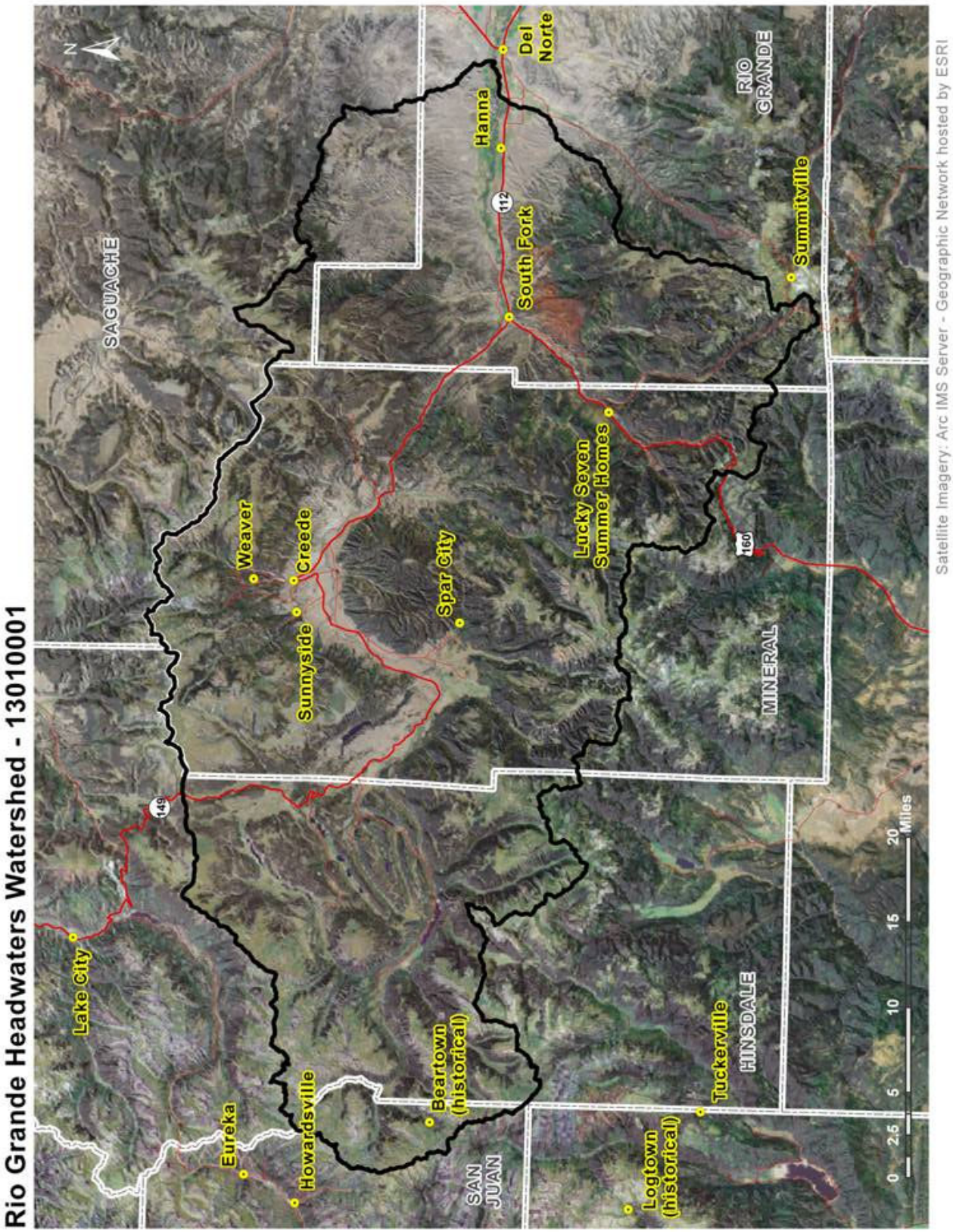
While rapid assessments provide less detail and analysis than full-blown studies and plans, they do provide the benefits of NRCS locally-led planning in less time and at a reduced cost. The benefits include:

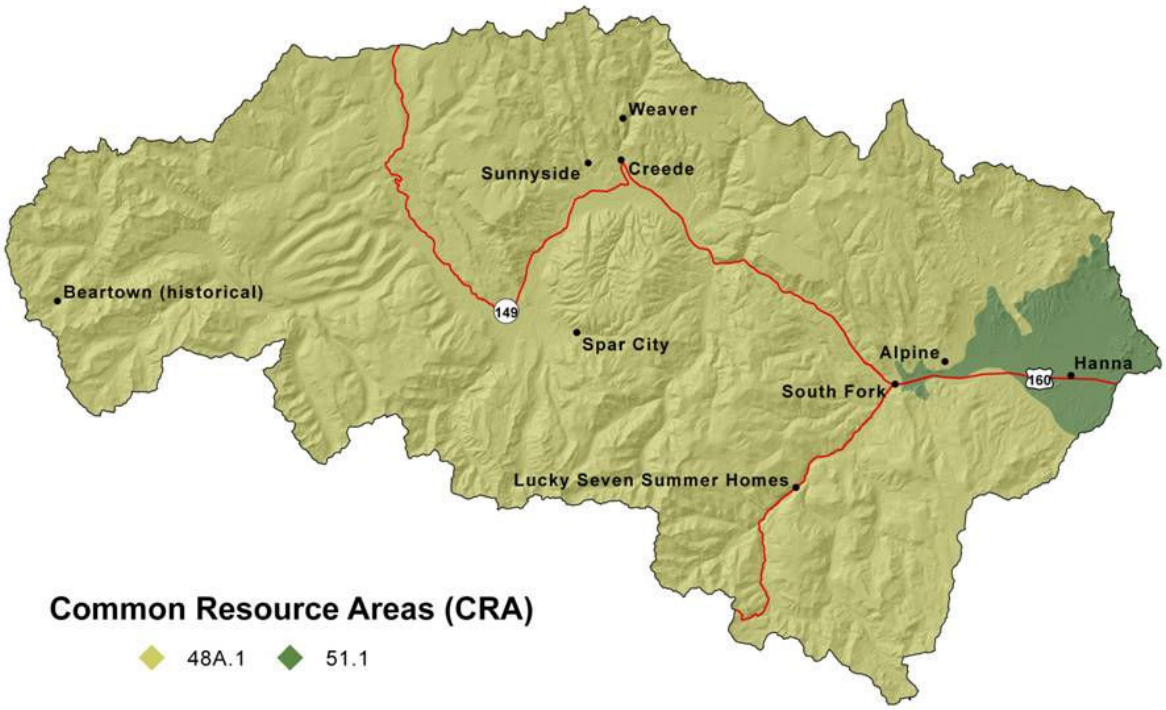
- Quick and inexpensive tools for setting priorities and taking action
- Providing a level of detail that is sufficient for identifying actions that can be taken with no further watershed-level studies or analyses
- Actions to be taken may require further Federal or State permits or ESA or NEPA analysis but these activities are part of standard requirements for use of best management practices (BMPs) and conservation systems
- Identifying where further detailed analyses or watershed studies are needed
- Plans address multiple objectives and concerns of landowners and communities
- Plans are based on established partnerships at the local and state levels
- Plans enable landowners and communities to decide on the best mix of NRCS programs that will meet their goals
- Plans include the full array of conservation program tools (i.e. cost-share practices, easements, technical assistance)

Rapid Watershed Assessments provide information that helps land-owners and local leaders set conservation priorities.



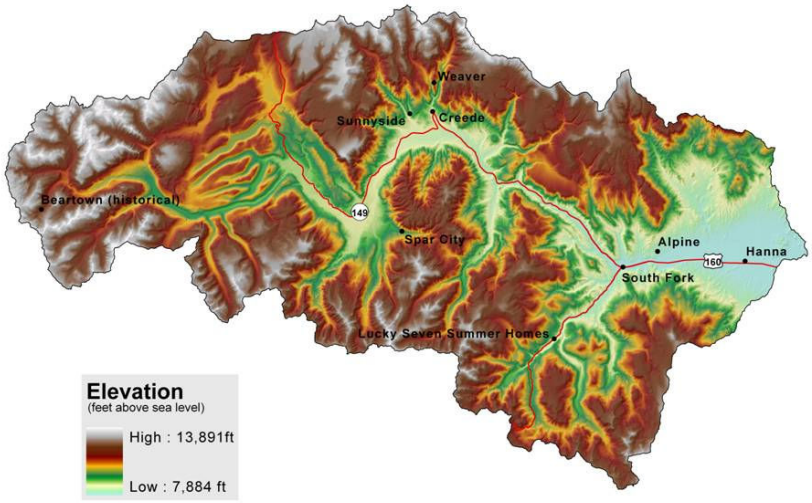
County	County Acres	County Acres in Rio Grande Headwaters Watershed	% of County in the Watershed	% of Watershed in the County
Hinsdale	719,387	207,044	28.8%	23.4%
Mineral	562,080	421,510	75.0%	47.7%
Rio Grande	584,463	185,687	31.8%	21.0%
Saguache	2,027,649	46,822	2.3%	5.3%
San Juan	249,413	22,445	9.0%	2.5%
		883,507		


Rio Grande Headwaters Watershed - 13010001
N
SAGUACHE
Hanna
Del Norte
RIO GRANDE
South Fork
Summitville
Weaver
Creede
Sunnyside
Spar City
Lucky Seven
Summer Homes
MINERAL
Lake City
Eureka
Howardsville
Beartown (historical)
Tuckerville
HINSDALE
SAN JUAN
Logtown (historical)
149
12
160
0 2.5 5 10 15 20 Miles
Satellite Imagery: Arc IMS Server - Geographic Network hosted by ESRI

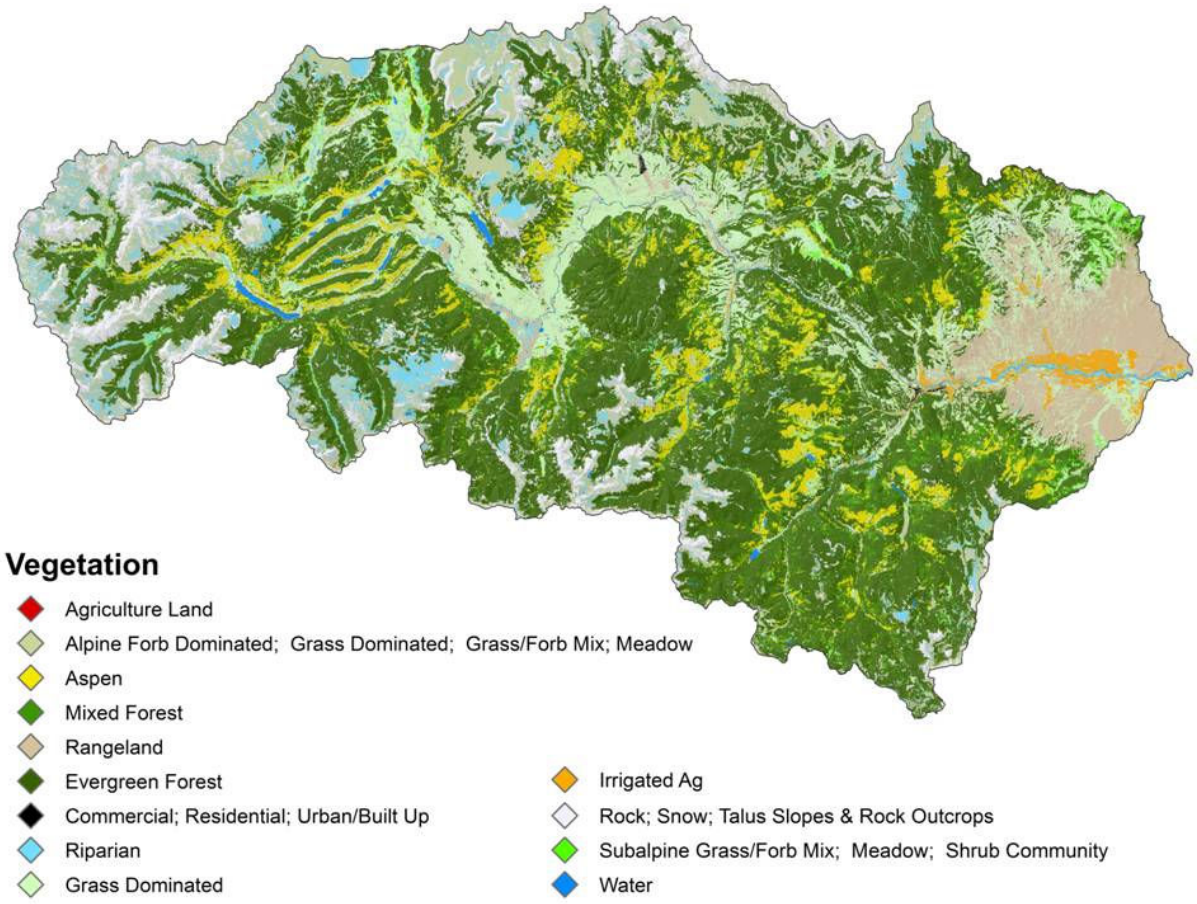


Common Resource Areas (CRA): Geographical areas where resource concerns, problems, and treatment needs are similar. Landscape conditions, soil, climate, human considerations, and other natural resource information are used to determine the geographical boundaries of the common resource area.

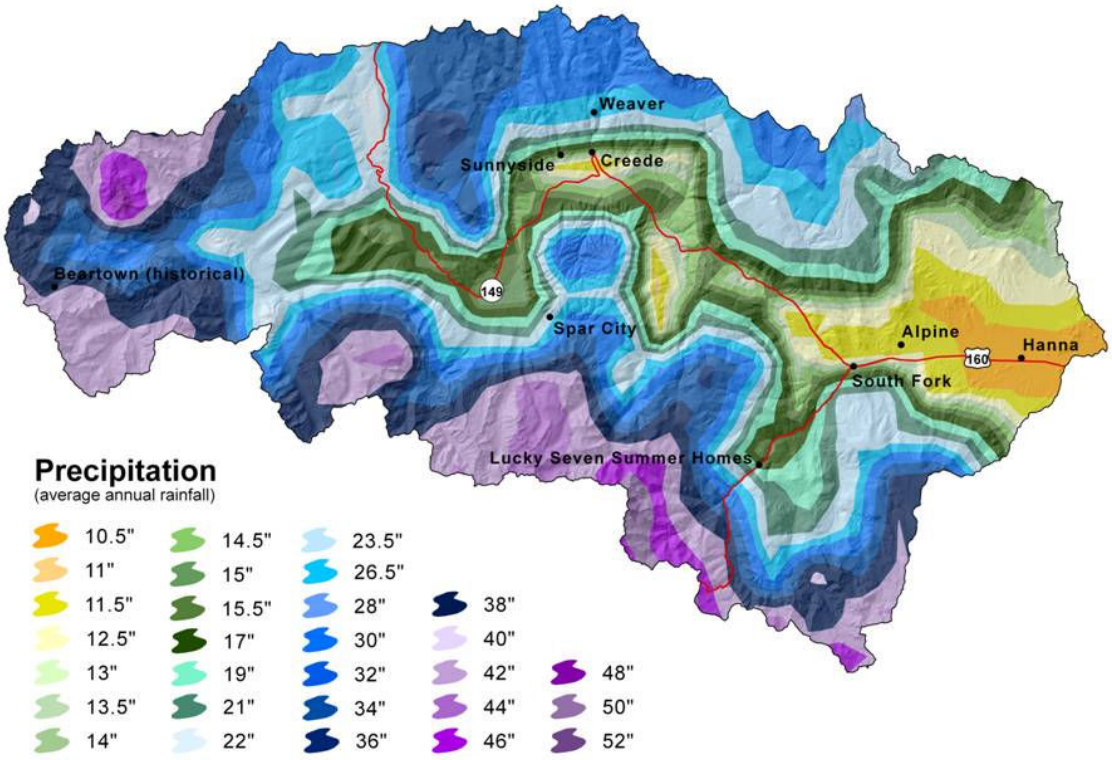
MLRA	CRA	CRA NAME	CRA DESCRIPTION
48A	**48A.1**	Southern Rocky Mountains - High Mountains and Valleys	This area is best characterized by steep, high mountain ranges and associated mountain valleys. The temperature regimes are mostly frigid and cryic; moisture regimes are mainly ustic and udic. Vegetation is sagebrush-grass at low elevations, and with increasing elevation ranges from coniferous forest to alpine tundra. Elevations range from 6,500 to 14,400 feet.
51	**51.1**	High Intermountain Valleys	This is an area of low relief composed of valley fill sediments from the surrounding mountains. The temperature regime is mainly frigid but includes mesic in the southern part. The moisture regime is aridic. Characteristic native vegetation is greasewood, fourwing saltbush, and alkali sacaton.

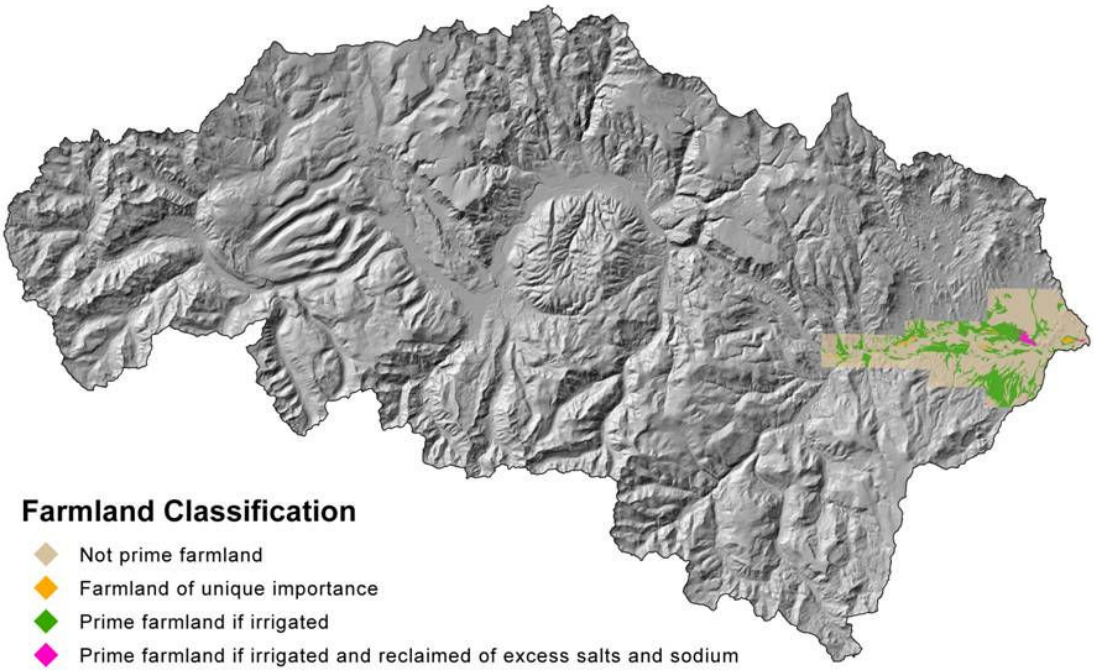


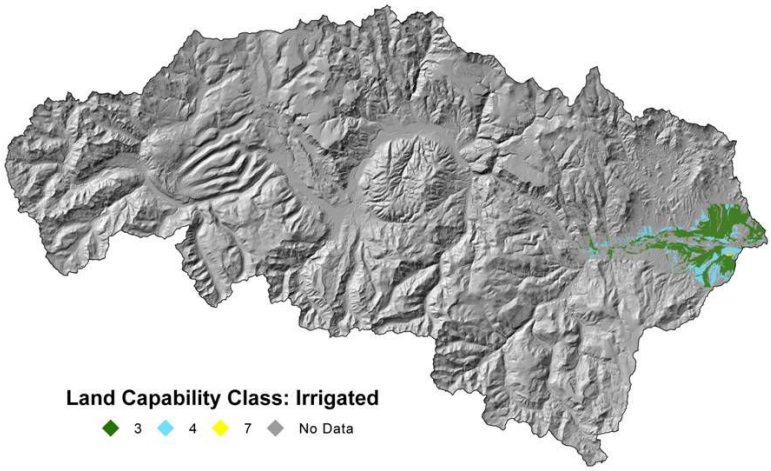
Rio Grande Headwater Land Ownership	
Bureau of Land Management	4,560
Private	82,062
State	3,566
State, County, City; Wildlife, Parks & Rec	1,836
U.S. Forest Service	791,483

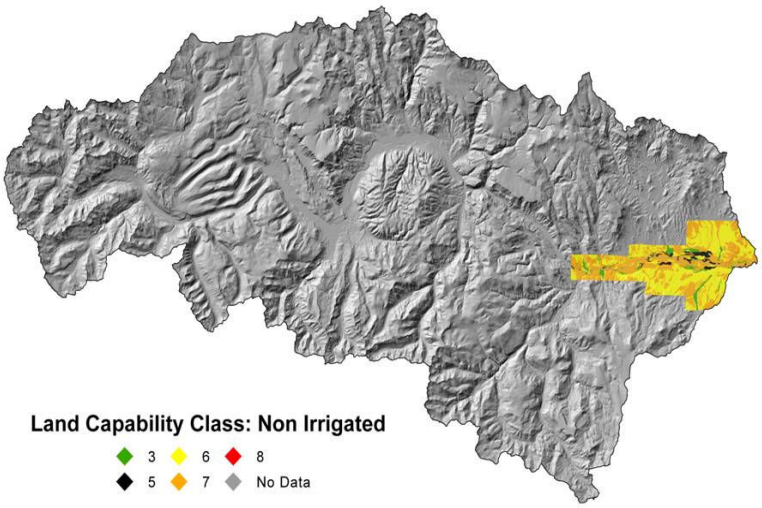


Land Use/Vegetation	Acreage
Cropland	8,015
Rangeland/Grassland	240,557
Forest	534,482
Riparian	12,670
Water	3,690
Other	84,057
Total Watershed Acres	**883,471**


Weaver
Sunnyside
Creede
Beartown (historical)
149
Spar City
Alpine
Hanna
160
South Fork
Lucky Seven Summer Homes
Precipitation
(average annual rainfall)
10.5"
11"
11.5"
12.5"
13"
13.5"
14"
14.5"
15"
15.5"
17"
19"
21"
22"
23.5"
26.5"
28"
30"
32"
34"
36"
38"
40"
42"
44"
46"
48"
50"
52"


Farmland Classification
Not prime farmland
Farmland of unique importance
Prime farmland if irrigated
Prime farmland if irrigated and reclaimed of excess salts and sodium





Land Capability Classes

Class 1 - soils have few limitations that restrict their use.

Class 2 - soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class 3 - soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class 4 - soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class 5 - soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

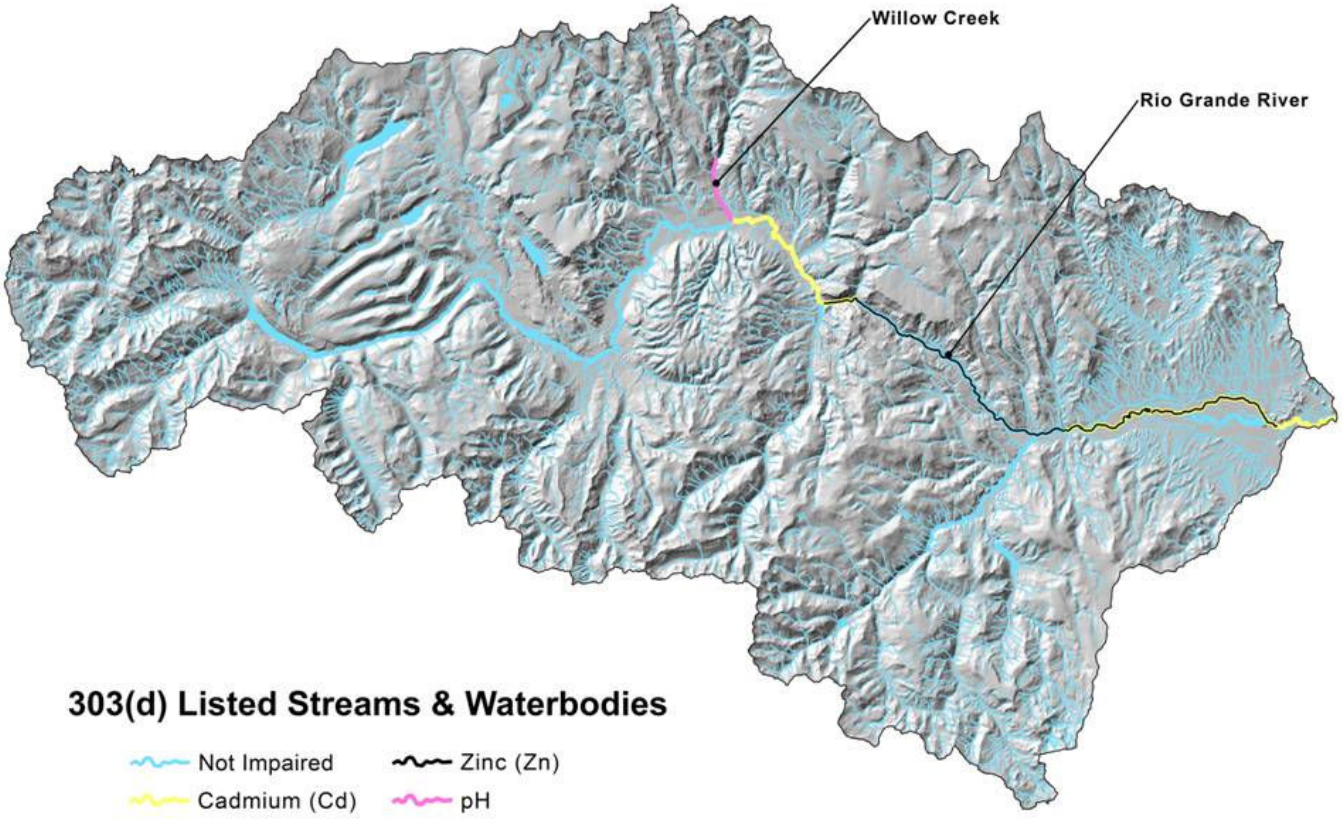
Class 6 - soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

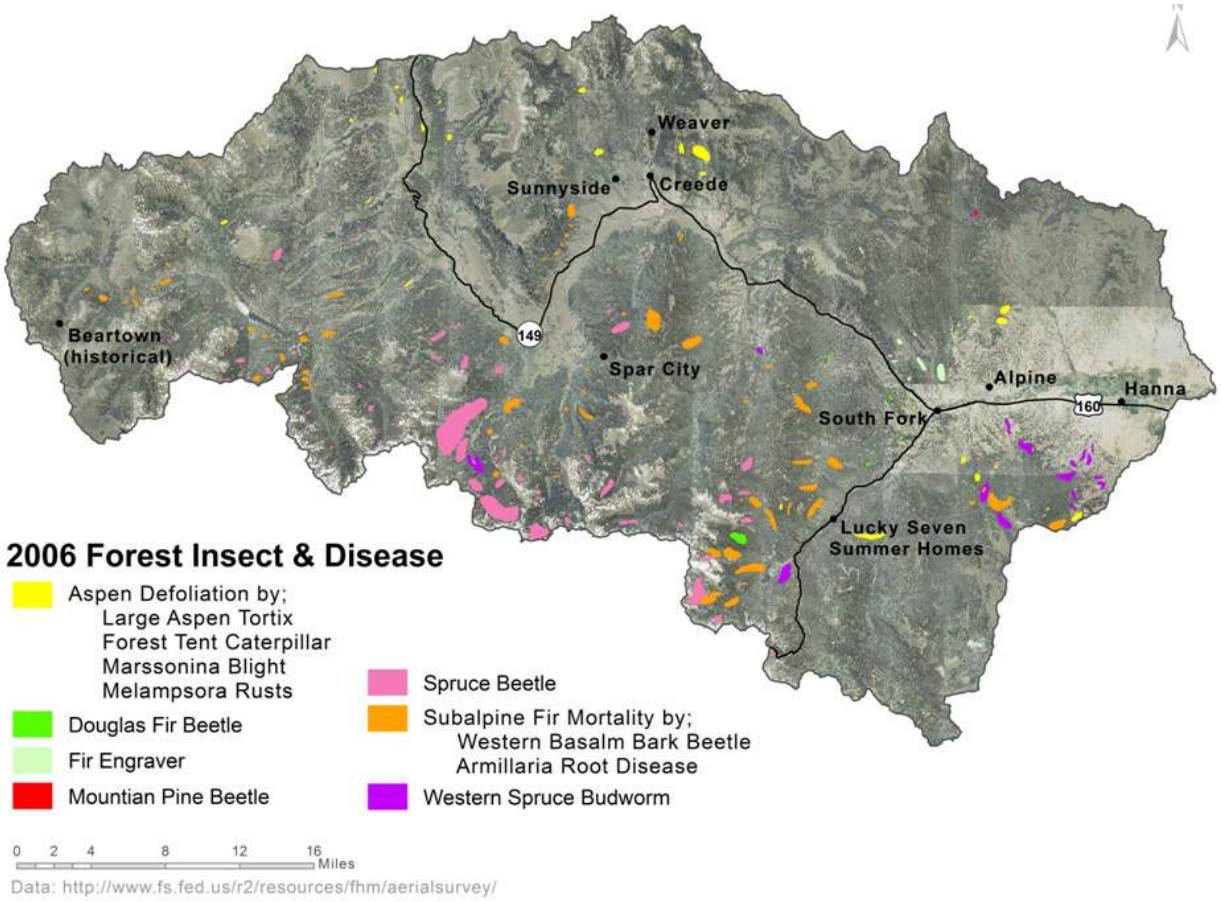
Class 7 - soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

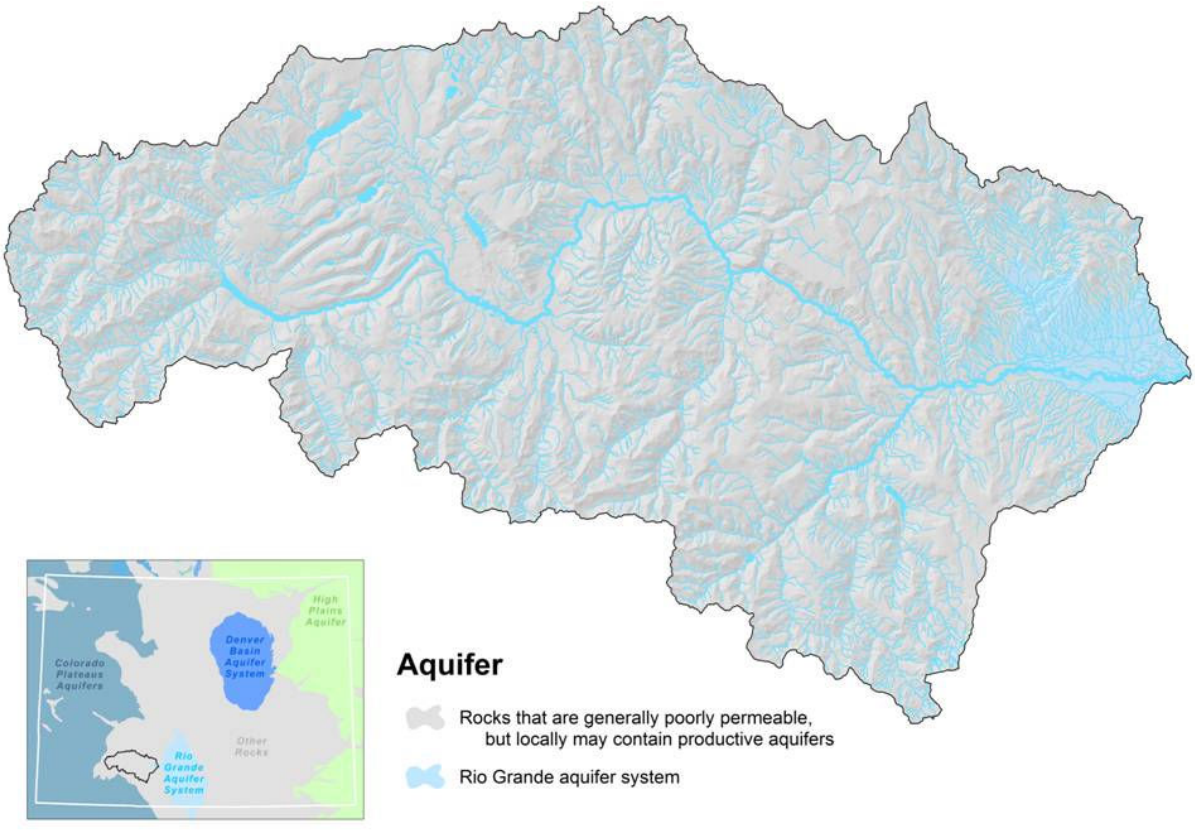
Class 8 - soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wild-

Stream Impairments

Section 303(d) of the Clean Water Act requires states to identify and list all water bodies where state water quality standards are not being met. Thereafter, TMDLs compromising quantitative objectives and strategies have been or will be developed for these impaired waters within the watershed in order to achieve their water quality standards.




Weaver
Sunnyside
Creede
Beartown
(historical)
149
Spar City
Alpine
Hanna
160
South Fork
Lucky Seven
Summer Homes
2006 Forest Insect & Disease
Aspen Defoliation by;
Large Aspen Tortix
Forest Tent Caterpillar
Marssonina Blight
Melampsora Rusts
Douglas Fir Beetle
Fir Engraver
Mountian Pine Beetle
Spruce Beetle
Subalpine Fir Mortality by;
Western Basalm Bark Beetle
Armillaria Root Disease
Western Spruce Budworm
0 2 4 8 12 16
Miles
Data: http://www.fs.fed.us/r2/resources/fhm/aerialsurvey/


High Plains Aquifer
Denver Basin Aquifer System
Colorado Plateaus Aquifers
Other Rocks
Rio Grande Aquifer System
Aquifer
Rocks that are generally poorly permeable, but locally may contain productive aquifers
Rio Grande aquifer system

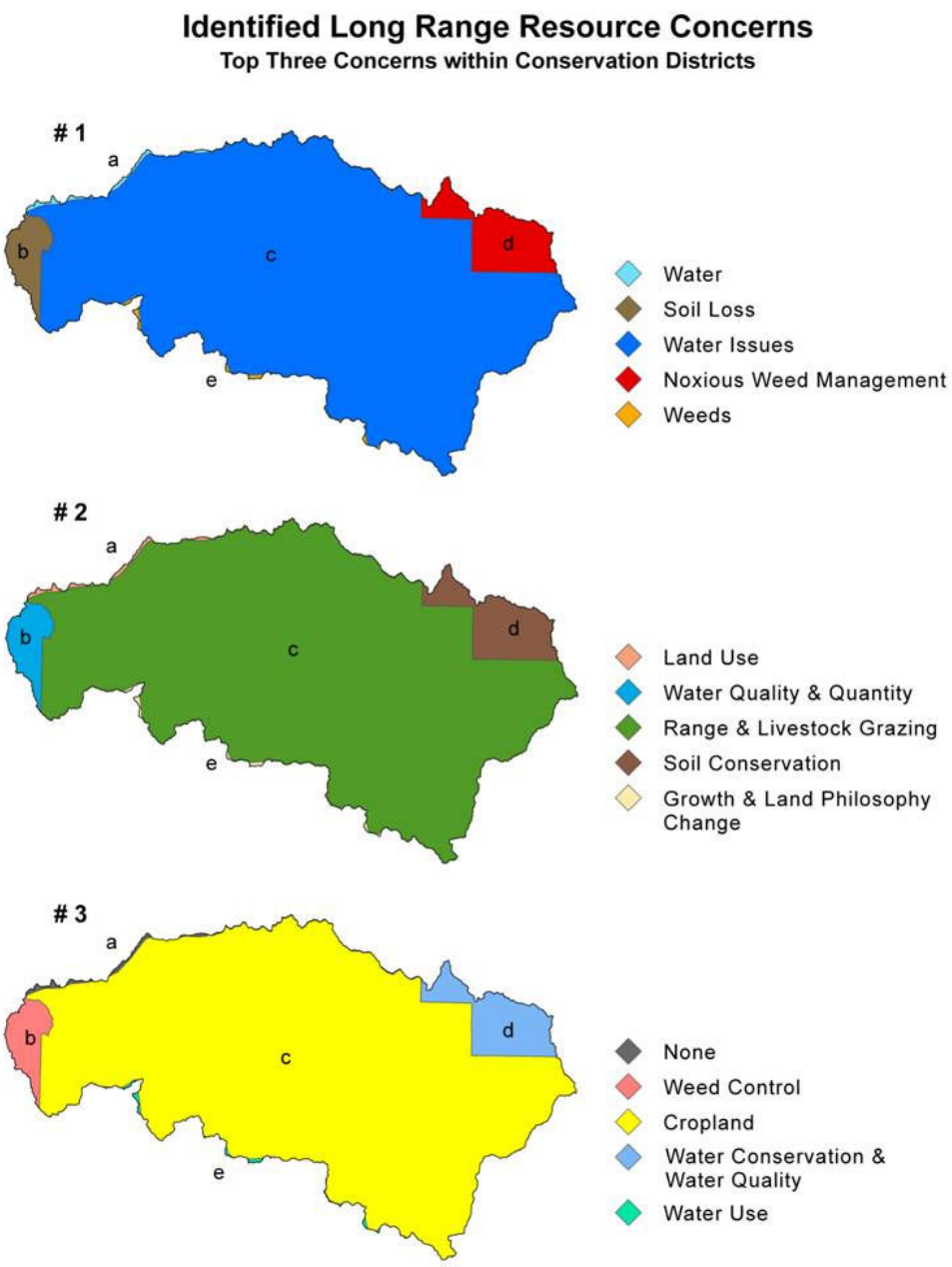
State and Federal Threatened, Endangered, and Candidate Species and Species of Special Concern in Rio Grande Headwaters Watershed

Common Name	Scientific Name	Class	State Status/Federal Status	Comments
American Peregrine Falcon	Falco peregrinus anatum	Birds	Concern/	Occurs and nests in the watershed
Bald Eagle	*Haliaeetus leucocephalus*	Birds	Threatened/None	Winters and nests in the watershed
Boreal Toad	*Bufo boreas boreas*	Amphibians	Endangered/None	Occurs in the watershed
Canada Lynx	*Lynx canadensis*	Mammals	Endangered/Threatened	Occurs in the watershed
Greater Sandhill Crane	*Grus canadensis tabida*	Birds	Concern/None	Occurs rarely in the watershed
Gunnison's Prairie Dog	*Cynomys gunnisoni*	Mammals	None/Candidate	Occurs in the watershed
Northern leopard frog	*Rana pipiens*	Amphibians	Concern/None	May occur in the watershed
Northern River Otter	Lutra canadensis	Mammal	Threatened/	May occur in the watershed
Rio Grande Chub	*Gila pandora*	Fish	Concern/None	Occurs in the watershed
Rio Grande Cutthroat Trout	*Oncorhynchus clarki virginalis*	Fish	Concern/None	Occurs in the watershed
Southwestern Willow Flycatcher	*Empidonax traillii extimus*	Birds	Endangered/Endangered	May occur at low elevations in the watershed
Townsend's big-eared bat (pale ssp)	*Corynorhinus townsendii pallescens*	Mammals	Concern/None	Occurs in the watershed
Uncompahgre Fritillary Butterfly	*Boloria acrocnema*	Insects	None/Endangered	Occurs in the watershed
Western Yellow-billed Cuckoo	*Coccyzus americanus*	Birds	Concern/Candidate	May occur in the watershed – not expected
Wolverine	*Gulo gulo*	Mammals	Endangered/None	Suitable habitat in watershed; No current records of occurrence

The terrestrial habitats in this watershed include montane shrub and forest, alpine tundra, and a small amount of high elevation grassland. Riparian areas and wetlands provide important aquatic habitats for a number of species providing food, cover, or water at some life stage.

Wildlife found at the highest elevations in the watershed include pika, marmot, lynx, bighorn sheep, and white-tailed ptarmigan. Mountain goats may be found at the extreme western edge of the watershed.

Economically important species in the watershed include: black bear, elk, moose, mule deer, mountain lion, and trout throughout most of the watershed. Pronghorn (antelope) and wild turkey may be found on the eastern edge of the watershed. Snow geese use the Rio Grande River at times.



Resource Concerns Identified by Conservation Districts

	Water Issues- Quality and Quantity	Rangeland	Cropland Sustainability	Streambank Stabilization	Noxious Weeds
Rio Grande	5	4	3	2	
Center	3	1	4		5
Totals	8	5	7		5

Note: The Colorado Conservation Districts identified and prioritized these resource concerns during facilitated public meetings and are included in their Long Range Plans.

Social Data

	Hinsdale	Mineral	Rio Grande	Saguache	San Juan
Demographics (US Census, American Factfinder)					
Total population	790	831	12,413	5,917	558
Male	406	424	6,116	2,984	293
Female	384	407	6,297	2,933	265
Median age (years)	43.9	45	37.3	36.9	43.7
White	769	805	9,177	4,218	542
Black or African American	0	0	43	7	0
American Indian and Alaska Native	12	7	157	122	4
Asian	2	0	28	27	1
Native Hawaiian and Other Pacific Islander	0	0	3	0	2
Some other race	3	1	2662	1361	4
Hispanic or Latino (of any race)	12	17	5172	2678	41
Economic Characteristics (US Census, American Factfinder)					
In labor force (population 16 years and over)	459	428	5,732	2,666	329
Median household income (dollars)	37,279	34,844	31,836	25,495	30,764
Median family income (dollars)	42,159	40,833	36,809	29,405	40,000
Per capita income (dollars)	22,360	24,475	15,650	13,121	17,584
Families below poverty level	11	24	385	291	21
Individuals below poverty level	57	85	1769	1325	115
			X means that value is not applicale or not availiable		
County Agricultural Characteristics (Colorado Agricultural Census, county data tables)					
Farms (number)	19	14	344	252	1
Land in farms/ranches (acres)	8,681	4,436	170,999	477,003	
Average size farm/ranch (acres)	457	317	497	1,893	
Median size farm (acres)	281	350	280	640	
Average age of farmer or rancher	54.4	65.1	54.2	54.1	
Net cash return from ag sales ($1,000)	-333	90	25,647	24,040	
Cattle and calves (number)	1,000		12,000	20,000	

Selected Conservation Application Data	Rio Grande Headwaters Watershed 13010001						
	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Total
Total Conservation Systems Planned (Acres)	30,000	59,794	na	59,173	49,892	9,353	208,212
Total Conservation Systems Applied (Acres)	30,113	46,039	na	55,643	50,279	13,104	195,178
Practices							
Prescribed Grazing (ac)	0	42,750	71	55,000	46,000	3,206	147,027
Upland Wildlife Habitat Management (ac)	0	3,294	45	0	1,597	3,033	7,769
Conservation Cropping System (ac)	0	3,294	45	0	104	129	3,527
Streambank and Shoreline Protection (ft)	na	na	1,678	17,300	8,997	10,088	38,063

Conservation Systems to Address Major Resource Concerns

Primary Resource Concern:	**Rangeland Health**			
Conservation System Description:	Prescribed Grazing—planned management that provides adequate recovery opportunity between grazing events and proper stocking of animals. Estimate 15,000 acres need to be treated on median sized ranches of 650 acres.			**Based on Conservation System Guide Code:** CO 51.1-GR-01-R-Grazing
Practices	**Unit**	**Quantity**	**Cost/Unit ($)**	**Estimated Cost per Median Sized Ranch ($)**
Prescribed Grazing				
Fence (382)	Ft.	4,000	0.6	2,400
Pest Management (595)	Ac.	300	15	4,500
Pipeline (516)	Ft.	6,000	1.05	6,300
Upland Wildlife Habitat Management (645)	Ac.	300	na	0
Watering Facility (614)	No.	1	500	500
Windbreak/Shelterbelt Establishment (380)	Ft.	1,000	.35	350
Costs to apply prescribed grazing per median sized ranch of 5,000 acres	No.	23	14,050	323,150
			Subtotal Rangeland costs:	**$323,150**

Conservation Systems to Address Major Resource Concerns (cont'd)

Primary Resource Concern:	**Water Quality**			
Conservation System Description:	Surface irrigation converted to sprinkler system. Sprinkler irrigation system with IWM, Crop rotation, Mulch-till, Nutrient and Pest Mgt.			**Reference Conservation System Guide Code:** CO 51.1-CR-Gravity-R-2
Practices	**Unit**	**Quantity**	**Cost/Unit ($)**	**Estimated Cost ($)**
Irrigation System, Sprinkler (442)	Ac	5,000	600	3,000,000
Irrigation Water Management (449)	Ac	7,000	5	35,000
Nutrient Management (590)	Ac	7,000	5	35,000
Pest Management (595)	Ac	7,000	15	105,000
Streambank and Shoreline Protection (580)	Ft	105,600	50	5,280,000
			Subtotal Irrigated Crops:	**$8,455,000**

General Effects, Impacts, and Estimated Costs of Application of Conservation Systems

Landuse	**Resource Concern**	**Measurable Effects**	**Non-measurable Effects**	**Estimated Cost ($)**
Rangeland	Plants		Improved plant condition, productivity, health and vigor. Grazing animals have adequate feed, forage, and shelter. Wildlife habitat is sustained or improved.	**323,150**
Irrigated Crop	Water		Nutrients and organics are stored, handled, disposed of, and managed so that surface water uses are not adversely affected.	**8,455,000**
			Estimated Total Costs to Address Major Resource Concerns:	**$8,778,150**

References Not Cited in Document

303(d) listed streams within Big Sandy Watershed were created using data from Colorado Department of Public Health & Environments' Water Quality & Control Commission. Impaired streams are current as of April 30, 2006. For a list of all Colorado impaired streams, locations and priority ratings, visit http://www.cdphe.state.co.us/regulations/wqccregs/100293wqlimitedsegtmdls.pdf.

Threatened and Endangered Species information was gathered using data from the Colorado Division of Wildlife (CDOW) Natural Diversity Information Source (NDIS).

Resource Concerns were identified using the Colorado Association of Conservation Districts' (CACD) long range (10 year) plans from the period of 1996-2000. For more information on Colorado's Conservation Districts, visit http://www.cacd.us.

Maps were generated using Soil Survey Geographic Database (SSURGO) tabular and spatial data. SSURGO data was downloaded for the following Colorado surveys:

Rio Grande County Area (CO631) Published 01/16/2007

Vegetation data was generated using the Colorado Division of Wildlife's "Colorado Vegetation Classification Project" (CVCP) data. visit http://ndis.nrel.colostate.edu/coveg.

Common Resource Area (CRA), a subdivision of the Major Land Resource Area (MLRA), is a geographical area where resource concerns, problems, or treatment needs are similar. For more information on Common Resource Areas visit http://soils.usda.gov/survey/geography/cra.html.

Average Annual Precipitation data was developed through a partnership between the Natural Resources Conservation Service's (NRCS) National Water and Climate Center (NWCC), the National Cartography and Geospatial Center (NCGC), and the PRISM (the Parameter-elevation Regressions on Independent Slopes Model) group at Oregon State University (OSU), developers of PRISM. Mean annual precipitation maps were developed calculating averages of rainfall for the period of 1961-1990. For more information visit http://www.ncgc.nrcs.usda.gov/products/datasets/climate/docs/fact-sheet.html or http://www.ocs.orst.edu/prism.

Land Ownership (status, 2004 dataset) data was obtained from the Colorado Department of Transportation (CDOT). For more information, visit http://www.dot.state.co.us.

Relief & Elevation maps were created using the National Elevation Dataset (NED), 30m Digital Elevation Model (DEM) raster product assembled by the U.S. Geological Survey (USGS). The data was downloaded from the NRCS Geospatial Data Gateway at http://datagateway.nrcs.usda.gov.

Conservation Systems to address major resource concerns were extracted from the Conservation Systems Guides (CSG) compiled from local conservationists by the NRCS Ecological Sciences Section at the Lakewood State Office.

Effects and Impacts of application of conservation systems were extracted from Colorado eFOTG, Section III, Resource Quality Criteria, NRCS, Colorado, March 2005.